PASSIVE TRANSMISSION LINE EQUALIZATION USING CIRCUIT-BOARD THRU-HOLES

ABSTRACT OF THE DISCLOSURE

A high-speed router backplane, and method for its fabrication, are disclosed. The backplane uses differential signaling trace pairs on multiple high-speed signaling layers, the high-speed signaling layers separated by ground planes. Plated signaling thru-holes connect the trace pairs to the board surface for connection to external components. The signaling thru-holes pass through clearances in each ground plane. At selected ground planes, a conductive pad is patterned within each high-speed signaling thru-hole clearance, the pad slightly larger than the thru-hole diameter. The pads affect the impedance characteristics of the thru-holes, thus providing a better impedance match to the differential trace pairs, reducing signal reflections, and improving the ability to signal across the backplane at high speeds.